ABSTRACT

THE GEOLOGY AND VEIN MINERALIZATION OF CEDAR VALLEY,
EAST-CENTRAL HUALAPAI MOUNTAINS,
MOHAVE COUNTY, ARIZONA

Karl Jay Schmid

Precambrian metamorphic rocks in Cedar Valley, having both sedimentary and igneous protoliths, consist of quartzites, schists, and felsic gneisses ranging in metamorphic grade from greenschist to epidote-amphibolite facies. A strong Precambrian deformational event produced isoclinal folds and north- to northeast-trending axial planar foliation. The metamorphic rocks were then intruded by later Precambrian diorite, granite, pegmatite, and diabase. A second Precambrian deformational event, contemporaneous with pegmatite intrusion, produced northeast-trending faults and regional cataclastic textures in the rocks.

Phanerozoic rocks consist of Laramide rhyodacite dikes and mineralized hydrothermal quartz veins, and Quaternary alkali basalt dikes. The rhyodacite dikes are offset by a N25°W, four-mile long shear zone (Cedar Valley shear zone). The quartz veins are concentrated in the Cedar Valley shear zone and are younger than the rhyodacite dikes. Although the Cedar Valley shear zone was active following the emplacement of the rhyodacite dikes and hydrothermal quartz veins, initial shearing may have occurred prior to their emplacement.

The discovery in 1873 of a mesothermal to epithermal quartz veins containing Ag-Au-Cu-Pb-Zn minerals led to the production of $450,000 in silver and gold within 25 years. Hypogene ore minerals, in paragenetic sequence,
consist of pyrite, gold, sphalerite, galena, tetrahedrite, chalcopyrite, silver sulfides, antimony-bearing silver sulfosalts, and electrum. These ore minerals may have been derived from hydrothermal fluids associated with the 66 m.y. old Diamond Joe pluton located two miles to the northeast, for preliminary study indicates concentric zoning of high- to low-temperature minerals around the Diamond Joe intrusion. Assay values of primary ore from the Silver Queen, Arnold, and General Lee mines average 50 oz. Ag/ton and suggest favorable economic potential for the Cedar Valley area.